

REMARKS

The present amendment is in response to the Official Action dated October 28, 2003, and is intended to be fully responsive to all points of rejection raised by the Examiner. The present amendment is believed to place the application in condition for allowance.

Claims 1 – 38, 81 – 83, 92 – 102, 104, and 111 – 115 are pending in the application. Claims 39 – 80, 84 – 88, 103 and 105 – 110 are cancelled without prejudice or disclaimer. Claims 89 – 91 are presently withdrawn from consideration.

Claims 1, 30 – 33, 81, 83, 92 – 97, 99 and 100 are currently amended. Claims 111 – 115 are new independent claims.

No new matter has been added. Support for the amendments can be found, inter alia, at Figs. 3 and 4A – 4D; at page 14, line 29 – page 15, line 9, page 22, line 31 – page 23, line 24, and page 29, lines 9 – 26 of the written description (locations in the specification refers to the version published under WO 00/02424); and at original claims 77, 79, 80 and 96.

Favorable reconsideration and allowance of all claims under consideration is respectfully requested.

Amendments to the Specification

The specification stands objected to for missing an abstract of the disclosure. An abstract of the disclosure is submitted herewith on a separate sheet.

Claims Objections

Claims 30, 31, 32, 33, 66, 70, 71, 77, 83, 84, 93, 94, 95 and 106 stand objected to because of various informalities indicated by the Examiner. Claims 30, 31, 32, 33, 83, 93, 94, and 95 have been amended to address informalities indicated by the Examiner. In view of these amendments, the Examiner is respectfully requested to withdraw these objections to claims 30, 31, 32, 33, 83, 93, 94, and 95.

Claims 66, 70, 71, 77, 84 and 106 are cancelled without prejudice or disclaimer thereby obviating the objection to these claims.

Claim 110 is objected to as being of improper dependent form. Claim 110 is cancelled without prejudice or disclaimer thereby obviating the objection to this claim.

Duplicate Claims

Claims 77, 107 and 108 stand objected to as being substantial duplicates of claims 70, 68 and 69. Claims 77, 107 and 108 are cancelled without prejudice or disclaimer thereby obviating the objection to these claims.

Claims Rejections – 35 U.S.C. §102(b) – Scifres

Claims 1 – 7 and 104 stand rejected under 35 U.S.C. §102(b) as being anticipated by Scifres et al. (U.S. 4,445,125). Applicants respectfully traverse the above rejection as applied to each rejected claim.

Scifres describes a diode laser array system for printing and copying applications in which additive exposure of the same data spots is provided by multiple beams scanning the same line.

Claim 1 has been amended and now includes the following distinguishing recitation:

providing a scanning beam comprised of a plurality of independently addressable sub-beams;

scanning the surface with said scanning beam a plurality of times, said sub-beams scanning the surface side-by side in the cross-scan direction, each said sub-beam being modulated to reflect information to be written; and

overlapping the beams in successive scans in the cross scan direction such that all written areas of the surface are written on during at least two scans.

As noted above, Scifres describes a diode laser array system for printing and copying applications in which additive exposure of the same data spots is provided by multiple beams scanning the same line. Although Scifres additionally describes a device simultaneously scanning different scan lines, the description of a device operative to simultaneously scan different scan lines is expressly limited to "those instances where a single laser can expose each spot of a scan line of a photosensitive medium with the required exposure intensity for that photosensitive medium" (see paragraph 2 of the abstract and col. 4, line 39 et. seq.).

Scifres fails to show or suggest scanning the surface with a scanning beam a plurality of times, the beam including a plurality of independently modulated sub-beams, and overlapping the beams in successive scans in the cross scan direction such that all written areas of the surface are written on during at least two scans.

In view of the foregoing, Applicants respectfully submit that claim 1, as amended, is patentable over Scifres. Furthermore, Applicants respectfully submit that Scifres specifically teaches not to overlap beams in the cross-scan direction such that successive scans provide additive exposure energy. Applicants, therefore, respectfully request that the Examiner withdraw this rejection of claim 1.

Claims 2 - 7 depend from claim 1 and include additional distinguishing recitation. Inasmuch as claim 1, as amended, is deemed patentable over Scifres, Applicants respectfully submit that claims 2 - 7 are also patentable over Scifres. Applicants respectfully request that the Examiner withdraw this rejection of claims 2 - 7.

With respect to claim 104, it is noted that Scifres describes a diode laser array system for printing and copying applications in which additive exposure of the same data spots is provided by multiple beams scanning the same line.

Claim 104 includes, *inter alia*, the following distinguishing recitation:

a beam comprising energy at two distinct spectral lines, modulated by data; and

an optical system that receives the beam and focuses it on the surface, such that a pattern is written on the surface by the at least one beam and such that the energy at both spectral lines is focused on the surface at the same position.

Scifres fails to show or suggest employing at least one beam having energy at two distinct spectral lines, and focusing the at least one beam onto a surface such that energy in both of the spectral lines is focused at the same position.

In view of the foregoing, Applicants respectfully submit that claim 104, as amended, is patentable over Scifres. Furthermore, Applicants find in Scifres no teaching or suggestion that would have enabled the person of ordinary skill to achieve the subject matter of claim 104. Applicants, therefore, respectfully request that the Examiner withdraw this rejection of claim 104.

Claims Rejections – 35 U.S.C. §102(b) – Kurusu

Claims 66, 68, 73 – 75, and 105 – 107 stand rejected under 35 U.S.C. §102(b) as being anticipated by Kurusu et al. (U.S. 5,012,089).

Claims 66, 68, 73 – 75 and 105 – 107 are hereby cancelled without prejudice or disclaimer. Applicants respectfully submit that this rejection is now obviated.

Claims Rejections – 35 U.S.C. §102(b) – Ohnishi et al.

Claim 67 stands rejected under 35 U.S.C. §102(b) as being anticipated by Ohnishi et al. (U.S. 4,212,018).

Claim 67 is hereby cancelled without prejudice or disclaimer. Applicants respectfully submit that this rejection is now obviated.

Claims Rejections – 35 U.S.C. §102(b) – Berman

Claims 84 – 85 stand rejected under 35 U.S.C. §102(b) as being anticipated by Berman (U.S. 5,247,174).

Claims 84 – 85 are hereby cancelled without prejudice or disclaimer. Applicants respectfully submit that this rejection is now obviated.

Claims Rejections – 35 U.S.C. §102(b) – Kramer

Claims 92 – 101 stand rejected under 35 U.S.C. §102(b) as being anticipated by Kramer (U.S. 4,826,268). Applicants respectfully traverse the above rejection as applied to each rejected claim.

Kramer describes a hologon scanner system operative to compensate cross scan error using an acousto-optic grating modulator.

Claim 92 has been amended and now includes the following distinguishing recitation:

a beam, modulated by data;
a rotating polygon, comprising a plurality of facets that move as the polygon rotates;
a first optical system operative to focus the beam at least in a cross-scan direction, on a facet,

such that the beam is angularly scanned in a scan direction, as the polygon rotates;

a second optical system operative to receive the beam and focus it on the surface, said second optical system configured to introduce a systematic deviation in the cross-scan location of the beam as a function of a position of the beam in the scan direction such that wobble of the polygon does not appreciably move the beam in the cross scan direction relative to a systematically deviated location.

As noted above, Kramer describes a hologon scanner system operative to compensate cross scan error using an acousto-optic grating modulator in which the position of the beam may be controlled electro optically by changing the frequency of the control signal to the modulator.

Kramer however fails to show or suggest an optical system operative to receive a beam and focus it on the surface, the optical system being configured to introduce a systematic deviation in the cross-scan location of the beam, as a function of a position of the beam in the scan direction, such that wobble of the polygon does not appreciably move the beam in the cross scan direction relative to a systematically deviated location.

In view of the foregoing, Applicants respectfully submit that claim 92, as amended, is patentable over Kramer. Furthermore, Applicants find in Kramer no teaching or suggestion that would have enabled the person of ordinary skill to achieve the subject matter of claim 92, as now amended. Applicants, therefore, respectfully request that the Examiner withdraw this rejection of claim 92.

Claims 93 - 96 depend from claim 92 and include additional distinguishing recitation. With respect to claim 96, claim 96 has been amended to eliminate redundancy with claim 92. Inasmuch as claim 92, as amended, is deemed patentable over Kramer, Applicants respectfully submit that claims 93 - 96 and are also patentable over Kramer. Applicants respectfully request that the Examiner withdraw this rejection of claims 93 - 96.

Claim 97 has been amended and now includes the following distinguishing recitation:

at least one beam, modulated by at least one data signal;

a rotating polygon, comprising a plurality of facets that move as the polygon rotates;

an optical system that receives the at least one beam and focuses it on the surface, such that a pattern is written on the surface by the at least one beam, wherein the optical system introduces systematic deviations in the cross-scan location of the beam as a function of its position in the scan direction; and

a data source that changes the data modulating the beam to compensate for the systematic crossscan deviations.

As noted above, Kramer describes a hologon scanner system operative to compensate cross scan error using an acousto-optic grating modulator in which the position of the beam may be controlled electro optically by changing the frequency of the control signal to the modulator.

Kramer however fails to show or suggest scanning apparatus having an optical system that introduces systematic deviations in the cross-scan location of the beam as a function of its position in the scan direction and a data source that changes the data modulating the beam to compensate for the systematic crossscan deviations.

In view of the foregoing, Applicants respectfully submit that claim 97, as amended, is patentable over Kramer. Furthermore, Applicants find in Kramer no teaching or suggestion that would have enabled the person of ordinary skill to achieve the subject matter of claim 97, as now amended. Applicants, therefore, respectfully request that the Examiner withdraw this rejection of claim 97.

Claims 98 - 101 depend from claim 97 and include additional distinguishing recitation. Inasmuch as claim 97, as amended, is deemed patentable over Kramer, Applicants respectfully submit that claims 98 - 101 are also patentable over Kramer. Applicants respectfully request that the Examiner withdraw this rejection of claims 98 - 101.

Claims Rejections - 35 U.S.C. §103(a) - Kurusu in view of Muto

Claims 69 - 72, 76 - 80, 83 and 108 - 110 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kurusu (U.S. 5,012,089) in view of Muto (U.S. 5,371,608).

Claims 69 - 72, 76 - 80, and 108 - 110 are hereby cancelled without prejudice or disclaimer. Applicants respectfully submit that this rejection is now obviated with respect to these claims.

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Claim 83 has been amended to depend from claim 81. Claim 81 was indicated to be allowable if rewritten in independent form including all of the limitations of its base claim and any intervening claims, and has been suitably rewritten. Applicants respectfully request that the Examiner withdraw this rejection of claim 83.

Claims Rejections – 35 U.S.C. §103(a) – Berman in view of Muto

Claims 86 – 88 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Berman (U.S. 5,247,174) in view of Muto (U.S. 5,371,608).

Claims 86 – 88 are hereby cancelled without prejudice or disclaimer. Applicants respectfully submit that this rejection is now obviated with respect to these claims.

Allowable Subject Matter

Applicants note with appreciation that claim 102 is indicated to be allowed.

Claims 8 – 38 are objected to as being dependent on a rejected base claim. Applicants note with appreciation that claims 8 – 38 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8 – 31 depend from directly and indirectly from claim 1 and include additional distinguishing recitation. Claim 1 has been amended to distinguish over the prior art of record (Scifres). Inasmuch as claim 1, as amended, is deemed patentable over the prior art of record, Applicants respectfully submit that claims 8 – 31 are also patentable. Applicants respectfully request that the Examiner withdraw this objection to of claims 8 - 31.

Applicants note with appreciation that claim 32 was indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, inasmuch as claim 32 already is an independent claim, Applicants respectfully submit that the objection to claim 32 is erroneous. Applicants respectfully note that claim 32 includes, *inter alia*, the following distinguishing recitation:

*providing a beam at a given optimized power;
modulating the beam;*

*scanning the beam across the surface in a first
direction with a first velocity, between a maximum and
minimum velocity, said maximum and minimum velocities
defining a scanning velocity ratio;*

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relatively moving the surface and the scanning beam on a second direction normal to the first direction at a second velocity; and

selectively varying the energy delivered to exposed areas on the surface by a ratio substantially greater than the scanning velocity ratio.

Applicants respectfully submit that none of the prior art of record, alone or in combination, show or suggest the distinguishing features claimed in claim 32.

In view of the foregoing, Applicants respectfully request that the Examiner withdraw this objection to claim 32 and indicate claim 32 to be allowable.

Claims 33 – 38 depend directly and indirectly from claim 32 and include additional distinguishing recitation. Inasmuch as claim 32 is deemed patentable, Applicants respectfully submit that claims 33 – 38 are also patentable. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this objection to claims 33 – 38 and indicate claims 33 – 38 to be allowable.

New Claims

Claims 111 – 115 are new claims.

Claim 111 incorporates the subject matter of claim 1 (prior to current amendment) and claim 8. Claim 8 depends directly from claim 1 and was deemed to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Entry and allowance of this claim is respectfully solicited.

Claim 112 incorporates the subject matter of claim 1 (prior to current amendment) and claim 11. Claim 11 depends directly from claim 1 and was deemed to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Entry and allowance of this claim is respectfully solicited.

Claim 113 incorporates the subject matter of claim 1 (prior to current amendment) and claim 14. Claim 14 depends directly from claim 1 and was deemed to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Entry and allowance of this claim is respectfully solicited.

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Claim 114 incorporates the subject matter of claim 1 (prior to current amendment) and claim 19. Claim 19 depends directly from claim 1 and was deemed to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Entry and allowance of this claim is respectfully solicited.

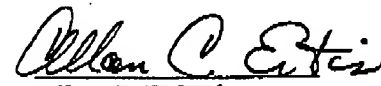
Claim 115 incorporates the subject matter of claim 1 (prior to current amendment) and claim 30. Claim 30 depends directly from claim 1 and was deemed to be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Entry and allowance of this claim is respectfully solicited.

Conclusion and Request for Interview

In view of the foregoing, this application is believed to be in order. Reconsideration and allowance of this application are respectfully solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact Paul Fenster at toll free 1-877-428-5468. This number connects directly to our office in Israel. Please note that Israel is 7 hours ahead of Washington and that our work week is Sunday-Thursday.

Respectfully submitted,
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